

## CLAIMS

What is claimed is:

1. Method for detection of chemical compounds, comprising the steps of:  
5 providing a flow path extending between a sample inlet and an outlet,  
providing an ion filter disposed in the flow path; said ion filter further providing  
electrodes opposite each other;  
providing an electrical controller configured to apply an asymmetric periodic  
voltage across the ion filter electrodes for controlling the path of ions through the ion  
10 filter by creating a filter field transverse to the flow path;  
providing compensation of the filter field to enable ion species from the sample  
inlet to be separated, with desired species being passing through the filter for detection.
2. Method of claim 1 further including the step of resolving putrescine from  
15 cadaverine for each other in a detection spectra.
3. Method of claim 1 further including the step of performing breath analysis.
4. Method of claim 1 further including the step of detecting and distinguishing  
20 between isomers of xylene.
5. Method of claim 1 further including the step of detecting and distinguishing  
between liquid samples having different analytes.

6. Method of claim 1 wherein said liquid is urine and the method is for performing urinalysis on said urine.

7. A high field ion mobility filter and detection system comprising:
- a pair of spaced substrates defining between them a flow path for the flow of ions between a sample inlet and an outlet,
- an ion filter disposed in said path and including a pair of spaced filter electrodes,
- 5 a high-low varying asymmetric field being developed transverse to said flow path between said electrodes, said ion filter for filtering ions in said flow of ions according to mobility differences of aid ions in said field,
- said filter electrodes facing each other over said path and separated by an analytical gap, and
- 10 an electrical controller for applying an asymmetric periodic voltage across the ion filter electrodes, for generating said field in said gap, said field compensated for controlling the paths of species of said ions through said filter.
8. System for the performance of urinalysis, comprising:
- 15 a high field ion mobility filter defining an enclosed flow path for the flow of ions between a sample inlet and an outlet,
- a device for drawing headspace gas from a urine sample into said flow path, said urine sample being ionized,
- means for conveying said ionized sample in said flow path into said gap and
- 20 toward said outlet,
- a plurality of electrodes including a pair of filter electrodes associated with said flow path and defining between them an analytical gap, said filter electrodes and said gap defining an ion filter,

means for developing a high-low varying asymmetric field in said gap, said field being developed transverse to said flow path,

said ion filter filtering ions in said flow of ions according to mobility differences between species of said ions in said field in said gap, and

- 5 an electrical controller for applying an asymmetric periodic voltage across said ion filter electrodes, for generating said field, said field compensated for enabling a selected ion species to pass through said gap while other species are neutralized by contact with said filter electrodes.